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FOOT-AND-MOUTH DISEASE.

Research Work Problems.

SLAUGHTER POLICY VINDICATED.

(Re-printed from *The Times*.)

The prominence with which progress in eradicating foot-and-mouth disease has been reported, both during the present outbreak and during the heavy epizootic of last year, has provoked a considerable amount of discussion as to the economic value of the slaughter policy. Many letters have been written to show that the disease is curable (which is the writers' interpretation of a fact that has never been in dispute—namely, that the great majority of animals attacked by the disease recover). Therefore, these correspondents argue, the present official policy of eradication by slaughter is grossly wasteful. The expression of such views indicates a complete lack of appreciation of the motives which determine the Government's control policy, and a very hazy knowledge on the part of the observer of the way in which foot-and-mouth disease attacks animals.

Some account is here given of the disease more particularly with reference to the recent progress of research and to those factors which determine what are generally known as veterinary police measures.

Foot-and-mouth disease belongs to a group of contagious diseases commonly classed as exanthematous fevers. These, as the name indicates, are diseases in which a systemic febrile reaction is accompanied by a skin eruption. Smallpox, cow-pox, sheep-pox, scarlet fever, and measles may be instanced as other examples of this group. The diseases mentioned are all caused by ultra-microscopic viruses or so-called filter-passers. It has, for many years past, been the generally accepted view that the ultra-microscopic viruses are in reality living organisms, considerably smaller than the smallest known bacteria or protozoa, but in most other respects essentially similar to these cellular organisms. Recent investigations into certain phenomena associated with the cultivation of bacteria in artificial media have somewhat modified this view, and it is now considered quite possible that the true ultra-microscopic virus may be more of the nature of an enzyme or ferment rather than an actual living organism of the bacterium type. Hitherto, in spite of the claims which have been made from time to time by various workers, it has also been generally accepted that no true ultra-microscopic virus has ever been cultivated—*i.e.*, induced to multiply—in an artificial medium. In the case of foot-and-mouth disease it now appears that the repeated efforts in this direction have at last proved successful; and if the results of the experiments in question continue to be confirmed by other workers, great advances will result, not only in relation to foot-and-mouth disease, but also in our knowledge of other filterable virus diseases both of man and animals.

SLOW PROGRESS.

It has naturally been the policy of those countries which are normally free from the disease to prohibit or greatly restrict experimental work, on account of the risk of the dissemination of the disease from research centres. On this account most of the research work on foot-and-mouth disease has been carried out on the Continent of Europe. In the United States no research has been possible. In Great Britain only one official research has been undertaken. This was carried out in 1920-21, under the direction of a committee which included several of the most eminent members of the medical and veterinary professions. This committee appointed a brilliant investigator of the modern school, who was assisted by one of the research staff of the Ministry of Agriculture in experiments which were carried out on a warship moored off Harwich. No definite progress was made.

The filterability of the virus of foot-and-mouth disease was first demonstrated by Loeffler in 1898. Loeffler and others maintained that the disease could not be transmitted to guinea-pigs, although it was asserted by Hecker as early as 1899 that he had succeeded in infecting small laboratory animals. During the past three years several workers in Germany have succeeeded with consistency in reproducing the disease in guinea-pigs. Finally, Titze in 1922 reported that he had successfully cultivated the virus in artificial media. Reinhardt also claims to have cultivated the virus to the fourth generation, and still more recently Pfeiler has stated that he has been able to cultivate the virus, in one case through as many as 164 generations. Pfeiler's cultures have proved pathogenic to guinea-pigs on inoculation. The results so far published are only in the nature of preliminary communications, but Titze has promised a monograph on the subject at an early date. It appears, therefore, that the present period is quite likely to prove an epoch-making one in the history of the ultra-microscopic viruses.

Question of Immunity.

There has been a considerable divergence of opinion among authorities as to the degree and duration of the immunity that results from a natural attack of foot-and-mouth disease. Certain workers have stated that a high-grade immunity of long duration results, while others have maintained that the period of immunity is of only a few months' or even weeks' duration. Vallée and Carré have recently published the results of certain experiments which suggest that variations in the degree of immunity conferred by a natural attack of the disease may be due to the fact that there is a plurality of strains of foot-and-mouth disease virus, and that the immunity produced by one strain does not necessarily protect an animal against another strain. Working with two strains, one of French origin and one of German, they found that animals inoculated with the French virus resisted reinoculation with the same virus more than one month after recovery from the first inoculation. Animals similarly inoculated with the French virus, when exposed at intervals varying from 35 to 86 days after the original inoculation to infection by contact with German virus, became infected. Moreover, an animal which had previously been highly immunised by repeated inoculations of large quantities of the French virus when exposed six months later to natural infection by the same strain also contracted the disease. This animal was again successfully infected 38 days later with virus of German origin. These results are in accord with the careful clinical observations of other workers. The plurality of strains of virus is well recognised in other diseases caused by ultra-microscopic viruses—*e.g.*, swine fever and South African horse sickness. In the case of the latter disease it is well known that animals which are immune as the result of recovery from an attack, or are "salted," as the stockowner expresses it, frequently contract a second attack of the disease on removal to another district. In this case it is most probable that the various strains of virus are restricted to particular localities owing to their being insect-borne.

The short period of immunity to the same actual strain of virus obtained in the hyper-immunised animal referred to above is significant, since it emphasises the fact that the immunity resulting from a natural attack of foot-and-mouth disease cannot be relied upon even for a few months.

The ideal method of fighting a highly contagious disease such as foot-and-mouth disease is to devise some means by which an active immunity of long duration can safely be conferred on animals without the risk of giving rise to the actual disease. That the problem in foot-and-mouth disease is an extremely difficult one follows from what has already been stated about natural immunity, but it is not necessarily an insoluble one. Loeffler advocated the use of virus mixed with the serum of recovered animals, but the method has not been satisfactory in practice. Such a method requires very careful balancing of the doses of virus and serum, it being necessary to over-neutralise the virus with serum to avoid setting up an attack of the disease, and at the same time not to carry the process of neutralisation so far that the immunity-conferring power of the virus is lost. Titze has published certain results which suggest that cultivated virus may possibly be useful in conferring immunity, and to some extent his observations in this respect have been confirmed by Pfeiler. In the light of recent progress it appears essential that any successful immunity must be capable of protecting against several strains of virus. This condition also obtains in the case of swine fever, and here successful results are obtained with a mixed inoculation method in the preparation of which several strains of virus are utilised. Until some successful method is elaborated and proved thoroughly efficacious the employment of immunisation obviously cannot be given serious consideration in countries such as Great Britain which are subject only to occasional invasion by the disease. The greatest difficulty in immunising against foot-and-mouth disease would appear to be the low antigenic or immunity-producing value of some strains of virus, as is evidenced by the case cited above.

The Economic Aspect.

It is well to state that in most outbreaks the great majority of cattle recover. In the average outbreak the losses by death will amount in the case of cattle to less than 1 per cent. of the animals affected, in the case of pigs to a somewhat higher proportion, and in the case of sheep to a figure at times as high as 30 per cent. As many as 20 per cent. of calves may die in the course of an ordinary outbreak. Occasionally a malignant or highly virulent form of the disease may appear, and in outbreaks of this type the losses among cattle may be as high as from 50 to 70 per cent. It must be admitted, however, that normally the disease in cattle runs a mild and favourable course, but at the same time there is always concomitant loss of flesh, and in the case of lactating animals a considerable reduction of milk production. It has been reliably estimated on the Continent that ordinary outbreaks involve an average loss where cattle are concerned of from £2 to £5 per head of animals affected.

It is well to consider what would be the result if an epizootic such as that of 1922 were allowed to spread throughout the country in the absence or total failure of control measures. In such a contingency there is no doubt that practically all the cattle in the country would become infected. If one takes the most moderate estimate of £2 as the loss per head and the proportion of animals infected as only 60 per cent., it will be seen that the resulting loss to the country on this count alone would be in the neighbourhood of fourteen millions sterling; the loss in pigs and sheep would in all probability amount to a greater figure.

Live Stock Industry.

Besides this direct loss there are also to be considered the effects which the presence of enzootic foot-and-mouth disease would exert upon the stock-raising industry. In such case the exportation of pedigree stock to countries free from foot-and-mouth disease—

e.g., the United States and Canada—would be prohibited. With the closure of our best markets the breeding of the highest class of pedigree stock would cease to be profitable, and the country would be deprived of that steady supply of moderately priced good-class pedigree breeding animals which has done so much in recent years to improve the herds of the home farmer, and which is so largely dependent upon, one might almost say which is a by-product of, the pedigree export trade. It is necessary also to bear in mind that the immunity acquired as the result of the epizootic might break down within a few months. Moreover, there must be taken into consideration the fact that young stock born each year would remain susceptible to the disease and would serve as excellent starting points for the initiation of further outbreaks, during the course of which the immunity of the animals formerly attacked would in all probability break down.

As against the amounts estimated above as the minimum direct loss from an uncontrolled outbreak it may be noted that, according to figures furnished in the annual report of the Chief Veterinary Officer for 1922, the average annual cost of eradicating outbreaks of foot-and-mouth disease from the year 1892 to 1922 has been approximately £9,000. The eradication of the 1922 outbreaks necessitated a net expenditure of £1,250,000, as against the very conservative estimate of some £28,000,000 had the disease been allowed to run its course—an ample justification of the efficacy of the slaughter policy.

It will be apparent that if in any circumstances foot-and-mouth disease were allowed to establish itself definitely in Great Britain, consequences of the gravest nature to the live-stock industry must ensue.

Birds as Carriers.

During the last 22 years there have been 80 initial outbreaks of foot-and-mouth disease in Great Britain. By initial outbreaks are meant those which must be ascribed to the introduction of the virus from the Continent, as distinct from the extension of the disease in this country. No satisfactory explanation of the manner in which the virus is introduced has so far been found. Statistics show, however, that a curve plotted from the numbers of initial outbreaks a year corresponds closely to the curve of the incidence of the disease in Western Europe—that is to say, when the disease is most prevalent on the Continent the number of outbreaks in Great Britain is highest. In the great majority of cases these initial outbreaks furnish no history of contact with persons recently returned from the Continent, or of the importations of foodstuffs, etc. Sir Stewart Stockman has several times examined the possibilities, and in 1919 suggested that the virus might be air-borne. In the *Journal* of the Ministry of Agriculture for November last he has discussed the further possibility that the virus might be carried by birds. In this article he has, with the co-operation of Miss Garnett, pointed out that certain features in connection with the time and place of initial outbreaks may be correlated with some normal features of bird migration. Two types of bird migration are considered, the well-known north and north-east to south movement in autumn and the return in spring, and the less-known east to west autumn migration from Holland and Belgium. It is pointed out that of 80 initial outbreaks occurring in the last 22 years 52, or 65 per cent., have been south-east of a line drawn from the Wash to the Bristol Channel, and of these 36, or 71 per cent., have occurred east of a line drawn north and south through the Isle of Wight. Further, it is shown that 84 per cent. of the outbreaks occurred in the months from September to January. It is considered that the location of the greater number of the outbreaks in the south-eastern area and their occurrence in the winter months might be explained if it were supposed that the virus could be carried by birds during the east to west autumn migration and by birds driven in from the Continent by hard weather during December and January. The autumn north to south movement is neglected, since the migrants in this case are from countries in which foot-and-mouth disease is not common.

Further evidence relating more particularly to individual outbreaks is produced, and it is pointed out that our knowledge of bird migration is incomplete on many points. There is one feature, however, that will require considerable explanation—*i.e.*, that while the autumn east to west migration and the less regular rough weather movements in December and January are supposed to give rise to 64 per cent. of the outbreaks, yet in the months of February, March, April, and May, during which the main spring migration from the south is taking place, only 19 per cent. of the outbreaks occurred. The circumstantial evidence adduced leaves the question open, but according to the authors falls short of establishing a negative.

Controlled Research.

During the last few days much has been written on the etiology and the control of foot-and-mouth disease. Naïve astonishment has been expressed that the veterinary authorities did not in these enlightened days know what bacillus was the cause of foot-and-mouth disease, and the suggestion has been made that medical men be employed to investigate it immediately. Apparently the authors of these statements are unaware that filterable viruses are responsible for several human diseases (one might mention such well-known diseases as smallpox, scarlet fever, measles, rabies, herpes), as well as numerous other diseases of plants and animals. It will be obvious that if any further investigation of foot-and-mouth disease in this country is contemplated it can only be undertaken under a rigorous supervision and under such conditions of environment and control as will minimise the risk of its originating further outbreaks. Permission to investigate the disease should only be granted to workers with extensive experience of foot-and-mouth disease and animal epizootics in general, who are fully alive to the risks of dissemination and who can offer adequate guarantees in the matter of providing suitable isolation, etc. If it is desired to investigate the ultra-micro-

scopic viruses *per se*, then there are several other diseases of a less dangerous character which will serve in this respect. Certain of these, such as fowl-plague, have the added advantage that the susceptible animals are of low cost.

Foot-and-Mouth Disease Common Sense.

We have pleasure in reproducing the following article, contributed to his paper by the agricultural correspondent of *The Observer*, as being by far the most sensible comment upon the foot-and-mouth epidemic which we have seen for many months:—

"A bad outbreak of foot-and-mouth disease affords better opportunity for the manifestation of urban ignorance than almost any other happening in farmland can provide; and we have had during the week the most sinister theories about the present epidemic.

"There are in this country about seven million head of cattle, twenty million sheep, and perhaps three million pigs, and of these thirty million animals the series of outbreaks that started in August has not yet accounted for one hundred thousand, including the contact ones that were slaughtered for safety's sake and were dressed and eaten. So far as sinister influences are concerned, they exist only in the minds of the providers of sensation. The outbreaks were well under control a month ago, and then, on November 18th, to be precise, some infected pigs were moved by rail from Aberdeen to Newcastle, where they infected the markets and the railway docks; *one hundred and sixty outbreaks followed*, directly traceable to cattle and sheep infected by the pigs. These animals were sent from Newcastle and Gateshead as far as Edinburgh in the North and Essex in the South, passing through and poisoning fresh markets *en route*. At the time of writing (December 13th) the situation is in hand everywhere save in Cheshire, where six hundred men are slaughtering diseased and contact animals. So urgent is the need to check the spread of virus that the carcases are being burnt without salvage, while shot-guns and revolvers have reinforced the humane killer and the pole-axe which some butchers insist upon using.

"The compensation paid for last year's compulsory slaughter amounted to three-quarters of a million pounds; for this year the bill is already round about a million. But the money is well spent. The annual loss of countries in which the disease is endemic is infinitely greater than ours. Down to March of this year the cost to Great Britain over a period of thirty-one years had only averaged £30,000 a year; while the loss to France in a single year has been estimated at five millions. In Spain this figure has been exceeded, while Holland has suffered to the extent of two and a half millions in a twelve-month. In the years before we inaugurated a slaughter and compensation policy, we were compelled to meet losses running into the million figure, for example, upwards of £650,000 for cattle alone in 1883, when pigs and sheep suffered badly too.

"The present policy helps our pedigree export trade, which, in some years, is worth seven-figure sums; it enables the farmer to re-stock his premises within a couple of months of the time when they are disinfected; it saves him from the loss he would endure if his animals were treated for the disease and recovered. There is no difficulty in curing 80 per cent. of foot-and-mouth cases, but cows go out of milk, fat stock lose condition, and months of careful feeding are required to restore them to the point they had reached before they were seized. Then again quarantine must needs be long; in Switzerland the premises on which animals have suffered are deemed to be infected for eight months. If the disease became endemic the farmer would be even more at the mercy of the dealer and the butcher than he is to-day, and at the same time the price of meat would rise to the consumer."

Preventing Foot-and-Mouth Disease: Final Experiments of Professor Vallée.

By J. R. Barker, M.R.C.V.S., D.V.H., Hereford.

For almost a century the live stock of England and the United States, and possibly that of Argentina, has suffered the consequences of the presence of foot-and-mouth disease, a disease which is always terrible, although it may present itself sometimes in a mild form. It would appear that we now find ourselves at the commencement of holding the disease in check, and most likely we shall soon arrive at the total extinction of this dread affliction—always more serious when it attacks the pedigree herds. The Authorities of the United Kingdom have proceeded with such rigour that no half measures have been taken, even to the sacrificing of the most valuable herds.

On many occasions it has been supposed that a final success has been attained in these experiments, many times, of course, falsely, in order to foist upon the public specifics which can have had no result.

However, notices are now to hand which assign a different result, namely, the experiments recently carried out by Professor Vallée, an eminent author in the veterinary world, and which command the greatest respect. A telegram from Paris, 26th November, says: "The experiments of P. Vallée to combat *B.apthosa*, have created the greatest interest, since that those recently made in the Somme have reduced the death rate from 60 to 3 per 1,000.

The following methods are employed:

The first procedure consists in injecting into the animals exposed to contagion the blood of an animal attacked with disease and recently cured. The second is the inoculation of a small quantity of the virulent blood, which is destined to provoke a mild form of fever, preventing thus a more violent form.

The Minister of Agriculture—M. Cherin—visited yesterday the laboratory of P. Vallée, who affirms that, very shortly, the mortality, even in very violent outbreaks, will be overcome.

The method, says P. Vallée, is inoffensive to the animals, but it necessitates adaptation to local

conditions, since the Apthous fever virus is not the same in all districts. Each region, therefore, has to prepare its own materials. M. Cherin has called a meeting of the Directors of Veterinary Service of the region in order to commence the technique and methods of P. Vallée."

Bracken Poisoning.

In reference to our note on the need for further research in the matter of Bracken Poisoning, we think it will be a service to our readers if we reproduce a short article by Sir Stewart Stockman on the question, which appeared in the *Journal of Comparative Pathology and Therapeutics* for 1922, pp. 223—275. Under the heading "Bracken Poisoning in Cattle in Great Britain," Sir Stewart writes :—

"In previous articles on this subject (Annual Reports to the Board of Agriculture, 1909 and 1910, and this Journal, 1917, p. 311), the author of this article dealt with the question of poisoning by bracken (*Pteris aquilina*), and furnished undoubted experimental evidence showing that the fronds of bracken, particularly in the season from August to the beginning of November, were poisonous by ingestion. It appeared, however, that a considerable quantity had to be consumed over a period of about twenty-five days before serious symptoms and results took place. Notwithstanding the definite experimental results, however, it would seem from various writings and discussions that some members of the Veterinary Profession are still debating whether bracken is a poisonous plant and responsible for losses accompanied by such definite symptoms as to give the impression that the affected animals are suffering from a specific disease as distinct from poisoning. Having regard to the fact that poisoning by bracken, when it reaches the acute stage, is ushered in by a very high temperature, 107° F., for example, there would appear to be at first sight a certain amount of justification for the view that disease, and not poisoning, is responsible for the trouble. The experimental results, however, reproducing, as they do, exactly what occurs in practice, remove all justification for attributing the trouble to anything other than poisoning by bracken.

"The symptoms and *post-mortem* findings having been dealt with fully in former papers, it is unnecessary to repeat them here, except to say that they are exceedingly like those which are described in connection with acute scurvy.

"The experiments about to be described were undertaken with a two-fold object. Firstly, it appeared desirable, in view of the doubt which seemed to exist in the minds of some veterinary practitioners, to obtain further experimental evidence. Secondly, having regard to the fact that the symptoms and lesions closely resemble those found in connection with scurvy, it also seemed desirable to obtain evidence on the question of whether it might not be merely one of the forms of avitaminosis.

"Experiment 1.—Bull Calf 340, four months old.

"The design of this experiment was to feed the animal on a mixed diet containing other foodstuffs, which, to a large extent, would eliminate the factor of comparative starvation; and, if symptoms of bracken poisoning appeared, to treat the animal by giving a generous ration of foodstuffs such as fresh swedes, which are known to contain a high proportion of antiscorbutic vitamine. It will be understood, of course, that an animal suffering from avitaminosis usually reacts in the direction of recovery with almost dramatic suddenness when the necessary vitamines are supplied.

"The experimental feeding of Calf 340 began on the 5th September, 1920, when it was fed with a ration of 4lbs. of newly cropped green bracken, together with a mixture of oats and bran. On the third day the amount of bracken was increased to 6lbs. The feeding was continued until the 2nd October—twenty-seven days—when the animal began to look ill and refused food. At this date it had consumed approximately 160lbs. of green bracken collected daily from hedgerows around the laboratory. On the 2nd October the temperature was 105° F. On the 3rd it was 107·4° F. On the 3rd October, that is the day after which distinct symptoms appeared, the animal was given a generous feed of swedes, but it did not seem inclined to make a meal of the roots. On the 4th October the temperature was 107° F., the animal was weak, the pulse fast and feeble, and respiration somewhat stertorous. The fæces were very dark in colour (due to admixture of blood), and of bad odour. The animal, however, had cleared up a good feed of chopped swedes and chaff, and seemed brighter. On the 5th October the temperature was 105° F. The animal was down and unable to rise. It died on this day—thirty days after the beginning of the experiment. The *post-mortem* showed lesions typical of bracken poisoning (see this Journal, Vol. XXX., p. 311).

"Experiment 2.—Calf 343, three and a half months old.

"The design of this experiment was to feed bracken, but at the start to give a generous allowance of swedes, in order to see whether the addition of this food, believed to be rich in anti-scorbutic vitamine, would arrest the appearance of symptoms of bracken poisoning, or exert any influence on them.

"On the 5th September, 1920, Calf 343 received 4lbs. of green fresh-cut bracken, together with a generous ration of chopped swedes. This ration was fed daily until 3rd October—twenty-eight days—when it had consumed approximately 112lbs. of green bracken On the 3rd October the animal looked ill and refused food. The temperature was 105·2° F. On 4th October the temperature was 107° F., the pulse was feeble and soft, and the fæces were very dark in colour (admixture with blood). The animal was very weak and refused food of any description. It was found dead on the 5th October—thirty days from the start of the experiment. The *post-mortem* lesions were typical of bracken poisoning.

"These experiments supply further definite evidence that green bracken is poisonous—in the autumn at

least—and that it is accountable for the trouble characterised by symptoms and lesions of acute scurvy, and which is sometimes regarded as a specific disease affecting a number of animals on the same pasture at about the same time. They also furnish evidence that the trouble does not arise from avitaminosis, but that it is probably due to a specific poison which has not yet been isolated.

"The author hopes to publish in a future paper the results of experimentation on species other than cattle, and on the effects following administration of extracts obtained from green bracken."

Eduardo Perroncito.

On the 17th and 18th of November, at Turin, Dr. Perroncito, Professor Emeritus of the Veterinary School of Turin, celebrated the fiftieth anniversary of his career as a teacher. The occasion was marked by a public gathering to give expression to the esteem, affection and honour in which Perroncito is held, not only in Italy, but throughout the scientific world. Messages of respect and admiration were received from scientists of all nations, who recognise him to be one of the foremost workers in the field of Veterinary Science, particularly that of parasitology.

Under the Presidency of Professor Faelli, a committee was appointed to organise the celebrations, and a fund has been raised to establish a "Perroncito Foundation," to award an annual prize to students of Comparative Pathology. A gold medal, with the following inscription, has been struck and awarded to the Professor:—

COMPIUTO IL MEZZO SECOLO
DELLO SPLENDORE DI UNA CATTEDRA INSIGNE
A EDOARDO PERRONCITO
VITTORIOSO SULLA MORTE DEI MINATORI
ECCELSO NELLE DISCIPLINE ZOOIATRICHE
INSUPERATO NELLA PARASSITOLOGIA
I COLLEGHI, I DISCEPOLI, GLI AMMIRATORI
DA OGNI TERRA DEL MONDO CIVILE
DECRETANO ONORANZE
L'ANNO MCMXXIII
LXXVI DELLA VITA VENERANDA DI LUI.

Among those present at the meeting were Professor Arloing, of Lyons; Professor Voronoff, famous in these days as the exponent of glandular treatment for rejuvenation; Professor Stazzi, representing the Veterinary School of Milan; Professor Barpi, of Piza; Professor Zappi, of Naples; Professor Lanfranchi, of Bologna; Professor Barile, of Parma; Professor Caradonna, of Perugia; Professor Ronca, of Modena; together with representatives of the Municipality of Turin, of the Universities, the Army, the Academy of Medicine, etc. Among the Professors of Veterinary Science present were Professors Faelli, Finzi, Ghisleni, Mazzini, Ravenna, and Zimmerl, of Turin, and a large number of other representatives of the Veterinary profession in Italy.

Professor RAVENNA, who succeeds Professor Perroncito in the Chair of Pathological Anatomy in the Turin Veterinary School, delivered an address on the life work of Perroncito, and was followed by Professor Arloing, speaking in the name of the oldest Veterinary School, that of Lyons, and of the various scientific academies of that city, of which Perroncito was a member. Professor Voronoff, of the Institute of Experimental Surgery at Paris, spoke of the world-wide value of Perroncito's work, and Dr. Torti, President of the National Veterinary Association, expressed the devoted homage and pride of the whole Italian Veterinary Profession in their great master.

Many other speeches followed, all directed to express gratitude to the venerable Professor, whose work had not only contributed to the saving of animal, but also of human lives, and had led to great improvements in agriculture and apiculture.

Professor PERRONCITO, rising to reply, was met with a tumultuous ovation, which affected him with deep emotion. He recalled the memory of his great masters Bizzozzero, Rivolta, Ercolani, expressed his gratitude to the Academies which had helped him in his researches and enabled him to solve difficult hygienic and economic problems, and paid a tribute to the value of Italian Science and to the part it was playing in maintaining the name of Italy in high regard.

Visits were paid to the Veterinary School, and a banquet followed. Later, Professor VORONOFF delivered a lecture on his own important researches, and thus terminated a most successful day of commemoration, which from reports received seems to have been celebrated by the town of Turin as one of the most important events in its history.

The weekly journal of the Italian National Veterinary Association—*Il Moderno Zooiatro*—thus concludes its report of these proceedings:—

"Hail, illustrious Master, To you all our respectful and profound homage, to you the affectionate salutations of the Veterinary Surgeons of all Italy. These look to you as to a guiding star; inspired by your excellent virtues, they will strive to raise ever higher their art and yours. The Science which you have nobly served, the immortal and sovereign Science which you have rendered more sovereign still, will transmit to all future times the ineradicable imprint of your Genius; Salve."

A Great Man's Work.

Under the above heading the *Manchester Guardian* of December 12th, says: "The University of Manchester is doing honour to-day to the great work which the late Professor Delepine achieved for the University and for public health. A memorial to him has been placed by his former colleagues and students in a niche facing the main staircase of the noble laboratory which he designed, and which owes to him its existence, character, scope, and influence. Since the crowning years of his life were devoted to public health, the memorial will fittingly be unveiled by Sir George Newman, the Chief Medical Officer to the Ministry of Health. Of French and Swiss parentage, and trained by a severe and accomplished father, Delepine received, at Paris and Geneva, a profound and extensive

training in the natural sciences. In 1877 he entered Edinburgh University as a medical student, and at the end of his course graduated with first-class honours. He then went to London as assistant to Sir Andrew Clark, and was appointed Pathologist and Lecturer in Physiology to St. George's Hospital. In these posts he worked with indefatigable energy, assisted by his wife, a daughter of Mr. Frederick Rose, and attracted general attention by his brilliant researches. In 1891 he was appointed Proctor Professor of Pathology in the Manchester University, and a course of lectures on bacteriology formed part of the duties. About this time attention was beginning to be directed to the applications of bacteriology to the service of public health, and of medical practitioners, a field of work which appealed to the bent of Delepine's genius. Under many difficulties he succeeded in creating a department of public health, and his efforts finally culminated in the erection of the Public Health Laboratory in York Place, which was opened in 1904. It was designed and equipped to serve three purposes. The first was to supply public health authorities and doctors with timely information about the sources of disease, with a view to its prevention or in aid of its treatment. A second object was to serve the requirements of the Public Health School. Finally, ample provision was made for purposes of research. The institution was therefore planned to contain suitable laboratories for each of these purposes, an ample library, a pathological museum, classrooms, administrative rooms, and indeed everything required for advanced scientific research, as well as for the routine needs of a public health department. Equipped completely and yet economically, it has served as a model for others of a like scope, both in this country and abroad, and has stimulated the provision of smaller laboratories over a wide area. On the opening of the laboratory Professor Delepine was appointed Professor of Comparative Pathology, Bacteriology, and Public Health. He was also Director of the Public Health Laboratory, a position which he valued not least.

"The objects which Delepine aimed at were completely accomplished. The Public Health School became one of the first in Great Britain, producing many eminent men and a great volume of excellent work. But Professor Delepine's services to public health extended far beyond Lancashire and Cheshire; he elucidated many problems and greatly aided in the prevention and treatment of disease. Amongst the many subjects on which his researches threw light were disinfection by chlorine, by formaldehyde, and by steam; the elimination of tuberculosis from herds; the reduction of anthrax in Cheshire; the determination of the presence and amounts of arsenic in beers and other organic materials (occasioned by the outbreak of beer poisoning in 1900-1901); the production of clean milk; trench-foot, and wool-sorter's disease. He had also a remarkable talent for mechanics, and invented a number of scientific appliances, including a collapsible sack disinfector. An intensely hard worker, he was also in leisure hours a most genial companion, full of simple good-nature and cheerfulness; his personality won the devotion of his staff and the warm regard of the many public bodies and Medical Officers of Health who

(*Continued at foot of next column.*

(*Continued from previous column.*)

sought his advice or assistance; but his greatest achievement was the creation of the Public Health Laboratory and the diffusion of the laboratory spirit of enquiry solely for the good of mankind and the increase of knowledge. It was the effort of a great man, greatly planned and worthily consummated."

Rapprochement with Veterinary Medicine.

(*Reprinted from the "Lancet."*)

An excellent example of the light which may be thrown upon the problems of human physiology and pathology by research undertaken from a purely veterinarian standpoint is afforded by investigations recently made by Dr. Theobald Smith and Ralph B. Little, V.M.D.,* at the Department of Animal Pathology of the Rockefeller Institute for Medical Research, into the significance of colostrum to the new-born calf. The investigation originated in an attempt to throw some light upon the high mortality of calves in the first week of life; this high mortality due to "scours," inflammation of the umbilical stump, and acute arthritis is the bane of owners of prize herds, to whom it means the annual loss of many valuable animals. The infective nature of the fatal conditions has long been recognised, and attempts have been made to combat them by isolating the calf immediately after birth and feeding upon sterilised or "clean" raw milk. The proved futility of these measures seems to have afforded the stimulus for the work of Smith and Little. They took two groups of calves; the animals constituting the first group were removed from their dams as soon as born and before they had had the opportunity to suckle; they were washed and dried with all possible aseptic precautions, the umbilical cord was snipped off and treated with antiseptics, and the calves then wrapped in blankets and transferred in a specially protected motor-lorry to the experimental units of the Department, a distance of about one and a half miles. The animals of the second group were left with their dams 24 hours, during which time it was ascertained that they suckled freely. They also were then removed to the Department units. At the units the calves of both groups were subjected to exactly the same treatment and given the same diet of fresh raw milk. Attention was directed to the condition of the calves during the first week of life, this, as pointed out above, being the danger period. During this time the fates of the animals constituting the two groups were strikingly different. Of the ten calves which had taken freely of colostrum all remained alive and healthy; of the twelve which had received none only three survived this first week. In the nine animals which succumbed death was in every instance due to a blood infection by *B. coli*, this organism being readily recoverable from the spleen, liver and kidneys, and in those which had developed arthritis from the joints also.

Although they do not definitely say so, the impression of the authors appears to be that the infecting strain of *B. coli* was not necessarily pathogenic. It is known that

* The Significance of Colostrum to the New-born Calf. Theobald Smith and Ralph B. Little. Studies from the Rockefeller Institute for Medical Research. Reprints, xliv., 523.

both in man and the lower animals *B. coli* appears in the bowel very shortly after birth ; the conclusion of Smith and Little is that in the absence of the colostrum this organism, instead of remaining a harmless saprophyte in the gut, gains ingress to the blood-stream and gives rise to a systemic infection. In the human field the above piece of research is complementary to recent observations on the constitution and function of the colostrum. Thus Lewis and Wells† have shown that the blood of babies at birth contains little globulin and practically no euglobulin ; colostrum they found to be rich in both these bodies. Moreover, they clearly demonstrated that whereas the proportion of these bodies rose rapidly in the blood of babies who had received colostrum, in those who had not the normal level was not attained for several weeks. It has long been recognised that antibodies of all sorts are associated with the globulin fraction of the serum, and the above authors suggested that the colostrum is the vehicle of conveyance of the maternal antibodies to the serum of the offspring. The observations of Smith and Little throw light upon several other points in human pathology which cannot be touched upon here ; but alone in giving practically conclusive proof of the validity of the tentative suggestion of Lewis and Wells they demonstrate the value of the comparative outlook in medicine.

Poisoned Elephants.

Mysterious Outrage in Surrey.

Mr. James Sanger, the well-known circus proprietor, has had the misfortune to lose three of his performing elephants by, it is believed, arsenical poisoning. The outrage was committed at his farm in Surrey, about four miles from Horley, and is attributed to some crazy person who took objection to the training of animals. Burstow Lodge, with its 300 acres, is the winter quarters of Mr. Sanger's big collection of animals, which includes elephants, camels, nearly 200 horses and ponies, sea lions, snakes, and kangaroos.

When a representative of *The Daily Telegraph* visited the farm he learnt from Mr. Sanger that the outrage occurred a month ago. Five elephants were in their stable—a huge wooden shed—at the time. Fortunately a sixth—"Tiny-the-Tank"—the cleverest of the troupe, was concluding a tour in Manchester. The crime was discovered on the night of November 7th, when on going to the stable to give the elephants their supper one of the men found the doors open and a plank of wood about 15ft. in length at the entrance. On the following day, when the elephants were taken to the practising ring for exercise, one of them was seen to be ill, and on that account all were returned to their quarters. The whole troupe afterwards became ill, and, as they refused food, Professor Wooldridge, of the Royal College of Veterinary Surgeons, Camden Town, was called in. The trouble was then believed to be due to chills, but notwithstanding the most careful nursing the animals grew worse. Two died the same day after suffering great agony, and another after a brief interval. Upon an examination being made the local veterinary surgeon found arsenic in sufficient quantity to cause death. Access to the farm is gained by a private path to which there is a public right of way, and it is believed that the person guilty of the crime was familiar with the farm, as anybody is at liberty to walk round the place and see the animals. "It may be," Mr. Sanger said, "that somebody has administered the arsenic with the mistaken notion that the animals are ill-treated. Certainly it was no accident. We have no arsenic on the premises. The whole affair is very mysterious. We can only surmise that the outrage was deliberately committed." He added that on a previous occasion one of the ponies was taken ill under similar circumstances and died at Stratford-upon-Avon, and quite recently one elephant recovered from a sickness which began with similar symptoms at Andover.

Search is being made for the miscreant, for whose arrest Mr. Sanger is offering a reward of £100. The dead elephants were valued at £4,000, and their places will shortly be taken by three others, already trained, which are coming to the farm from America. By careful nursing and watching the two other "invalids"—"Annie," which is the largest elephant in Europe, and "Betty"—are making satisfactory progress to complete recovery. They are being tempted with all kinds of diet, which includes such delicacies as brandy mixed with eggs, oranges, apples, sponge-cakes, and buns.—*The Daily Telegraph.*

† The Function of Colostrum. J. H. Lewis and H. G. Wells, Jour. Amer. Med. Assoc., lxxviii., March 25th, 1922, 863.

The late Mr. Adam Sievwright.

An Appreciation.

Adam Sievwright, M.R.C.V.S., Farland, Aberdeenshire, passed quietly away on Saturday, December 8th, 1923.

A native of Keith, Banffshire, Mr. Sievwright graduated from the New College, Edinburgh, in April 1878. After acting for a few months as assistant to the late Mr. A. McGillivray, Banff, he commenced the practice of his profession in Upper Deeside, Aberdeenshire, in the same year.

During the long period of 45 years he has conducted a large practice covering a very wide area—in summer the most beautiful in Scotland—in winter probably the most forbidding and inhospitable. Notwithstanding the severity of the climate, Mr. Sievwright had a very strong sense of duty, and did not spare himself in its execution. Probably no man in the profession has faced more "weather" than he did.

A skilful and accomplished practitioner, he always kept himself abreast of all the later developments of veterinary science. A man of uprightness and integrity, whose word was as good as his bond, he gained the confidence and respect of his many clients and friends. To his fellow practitioners he was ever kind and helpful, always ready and willing to come to the rescue of any one in difficulties.

He was a man with a most lovable disposition and has left a host of mourning friends—and no enemies.

On Wednesday, 12th December, he was carried shoulder high by four of his fellow-practitioners to his last resting place in Farland Churchyard, accompanied by a very large gathering of his clients and sorrowing friends.

He is survived by his widow, a daughter, and a son. The latter graduated from "Dick" College, Edinburgh, in 1922, and will carry on the practice.

The Veterinary Record.

29th December, 1923.

National Veterinary Medical Association of Great Britain and Ireland, Limited.

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1923—1924.

In this, the last issue of the *Veterinary Record* for the year 1923, we should in the first place like to wish all our readers a very happy and prosperous New Year, both on behalf of the Editor and General Secretary, and also on behalf of the Editorial Committee. In the second place we should like to thank very sincerely those gentlemen who have been so good as to send us articles and news for publication, and also those who have supported us with suggestions and letters of appreciation.

The year has been one of strenuous work, much of which is not ever seen or heard of, but which in time will most certainly produce good results. Even now indications are not wanting that a better spirit is abroad and that our Association is obtaining a hold on the profession and appealing to its interest in a way that speaks well for the future. The new Register is now complete, and we must take this opportunity of thanking the members and others who received the circular which was sent out in connection with it for the loyal and generous way in which they have responded and for the many pleasant and encouraging letters which we have received. The response exceeded our most sanguine expectations. Subscriptions have been received in such numbers as should cheer the officers of the Association as they have never been cheered before. We have no doubt that the really few outstanding amounts will soon come in and that the unpleasant business of debt collecting will soon be a thing of the past.

We start the New Year full of hope and encouragement. The Association is sound in every way. Our finances are in an excellent state, we have formed a basis for a reserve fund, our assets are "liquid" and sound, and we have practically no debts. 1924, therefore, will find us prepared to take advantage of any opportunity which arises of advancing our interests in conformity with our Memorandum of Association.

Though our organisation is now much better than it has ever been and our finances are satisfactory, these alone are not enough. We must have unity of thought and unity of purpose amongst our members. We have no use for those who cannot rise above indifference; we must have enthusiasm and effort, and a sincere desire on the part of every one of us to pull *together* and stick *together* for the good of all. The New Year will then deserve to rank as a memorable year in the records of the Association.

Royal College of Veterinary Surgeons.

RESULT OF THE DECEMBER EXAMINATION, LONDON.

CLASS D.

Barrett, Eric Philip	Bywater, Harold Edwin
Clarke, Ernest Lionel	Eardley, Frederick John
Evans, John	Fowler, Arthur
Gatfield, Edward Kempton	Goodall, Francis Welborn
Hale, Frank Russell	Holland, Harry Walter
Johnston, Donald	Lloyd-Jones, Thomas Dennis
Moss, Bernard	Norman, Edgar John Leslie
Pickup, Jack	Randle, Caleb Sims
Scott, Eustace Edward	Walpole, Basil Orford Eric
Ward, Aubrey Ernest*	Williams, John Douglas
Williams, Owen Lloyd	Willing, Richard Rogers*
Wright, John George†	

† 1st class honours; * 2nd class honours.

After twenty-four years we at last have had a student who is sufficently brilliant in his work to gain First-Class Honours in the final examination of the R.C.V.S. We believe we are right when we say that the last man to attain this distinction is Professor George Wooldridge (the hon. treasurer of this Association). Now after nearly a quarter of a century we are able to congratulate Mr. Wright of the R.V.C., London, on having gained the highest honour possible. We happened to be present at part of his oral examination, and we can testify to the large range of subjects on which he was questioned, and the searching nature of the examination and to the excellence of his answers. Mr. Wright has seen practice with Mr. Charles Roberts, Tunbridge Wells, with whom he will remain as assistant in future in general practice. Our sincere congratulations and good wishes for his future success!

Grafted Racehorse Experiment.

It is announced, says the Paris correspondent of *The Morning Post* that, so far as can be ascertained, the recent experiment of grafting a well-known French racehorse from another, after the Voroneff method, which was reported in a despatch some weeks ago, has proved perfectly successful. The animal that was the subject of the experiment was again put into training, and is apparently in the best of condition. The wound has completely healed, and the horse is feeding well. The horse from which the graft was taken returned to training over a week previously.

Racing experts are watching the grafted horse with the keenest interest, and intense curiosity is being displayed as to what his performance will be like when he returns to the racecourse.

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases.

"Tuberculin" and the Reliability of the Test.

By J. C. COLEMAN, M.R.C.V.S., Swindon.

From time to time one comes in contact with and hears of those who doubt the reliability of the tuberculin test, and it has surprised me for some time past that recognised authorities on the subject have not done more to combat these adverse opinions.

The laxity with which some practitioners may have conducted the test in past years may to some extent be responsible for the lack of faith therein held by the few.

The illicit use of tuberculin, however, is the most palpable and general cause of unsatisfactory results, and at the same time the most difficult to prove and bring home to the user thereof.

We should combine to support and agitate for a State control of this, when properly used, most reliable and necessary article.

"Tuberculin" has varied somewhat in its composition since first discovered. So recently as 1899 Muir and Richie, in their *Manual of Bacteriology*, speak of two kinds of "tuberculin," which, however, appear to differ only from that in use to-day in that the glycerine bouillon culture contained the dead bacillus (killed by heat), while in that of to-day the dead bacilli are removed.

I am intensely gratified to learn that our leading authorities have at last agreed that the human and bovine types of tubercle bacillus are one and the same; the morphological differences observed, being due to the part from which they were obtained; in other words, the human type becoming implanted into a bovine animal shortly takes on the morphological appearances of the bovine type.

Doubtless a large number of practitioners have observed, and I believe it is an admitted fact, that the reaction obtained by the use of tuberculin is no indication as to the extent or severity of the lesions which would be found upon *post-mortem* examination.

During 1913-14 I conducted a number of tests, and I had the opportunity of following a large number to the slaughterhouse. I kept a complete record of each case, and am now strongly of the opinion that in the cases of those animals which are greatly suspected as being affected with tuberculosis, and upon being tested show a doubtful or only slight reaction, it will, upon their being slaughtered, be found that in many instances the animal is very, very badly affected, and with most organs showing lesions.

In my humble opinion, this is accounted for by the fact that the system is already so charged with toxins, etc. produced by the bacilli, that the injection of tuberculin in these cases gives a doubtful reaction, or none at all, as it would do in a case that had been very recently tested, probably illicitly.

It would, perhaps, be of interest to add that I took samples of milk from the majority of the cases referred to above, and in no single instance did I find acid fast bacilli in the milk, without, upon post-mortem examination, finding either tuberculosis of the udder or supra-mammary gland. In many instances nothing could be detected by palpation during life.

To obtain the most reliable results, I strongly advise the use of M'Fadyean or Pasteur tuberculin, and the system of five inoculation temperatures, as demanded by Ministry of Health for Grade A certified milk.

It behoves the profession to be very thorough and conscientious in their testings to regain for the whole body that public confidence which some appear to have lost.

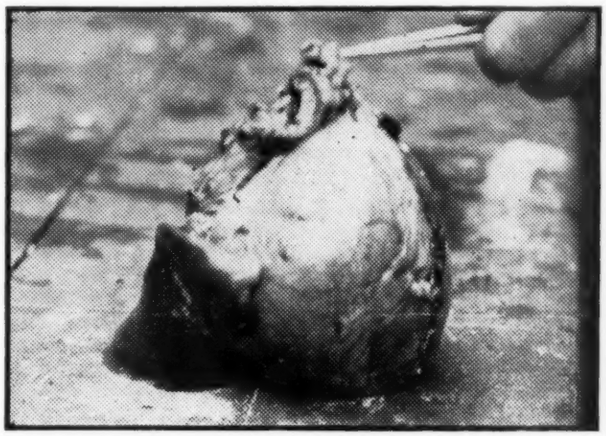
Dropsy.

By F. CHAMBERS, F.R.C.V.S., Wolverhampton.

On November 19th, I was asked to see a two-year-old fox terrier dog that had been ailing since November 2nd. The symptoms exhibited in the early stages of the illness were apparently obscure, for I could not get any definite history. When I saw him there was marked ascites, the abdomen being very much enlarged. There was much emaciation and the prepuce was dropsical, respirations laboured, temperature sub-normal and the pulse 144. Pressure over the abdomen was painful and caused discomfort. The dog would not lie down and there was complete loss of appetite. Defæcation had not taken place for several days, but the urine was voided normally.

Diagnosis.—Chronic nephritis or pressure on the portal vein. On November 22nd, I decided to perform an exploratory laporatomy. After preparing the patient, morphia (gr. ii) was administered and the anæsthesia completed with ether. On opening the abdomen, there was a gush of serum-like fluid. The amount of fluid which escaped would be about three pints. The peritoneum was much thickened but the intestines and liver appeared normal. The liver was much more posteriorly-placed than normal. Thinking that there might be a growth on the anterior surface of the liver, I enlarged the abdominal wound and made a thorough examina tion. It was then noticed that the diaphragm had a well-defined bulge towards the abdominal cavity. The portal vein was very much distended. As there was apparently nothing that could be done to relieve the condition, the dog was destroyed with H.C.N. in accordance with instructions left by the owner.

Autopsy. Stomach and intestines normal. Liver normal in size and weight but slightly cirrhotic. Gall bladder small. Bladder and spleen normal. Both kidneys exhibited that condition known as chronic parenchymatous nephritis and had reached the stage of "small white kidney." The connective tissue was thickened and there was a great diminution in the amount of parenchymatous tissue. The substance exhibited great resistance to the knife when cut. When the liver was being removed from the diaphragm and the portal vein was being severed, the blood



Hydropericardium with lungs adherent. The size may be judged by comparison with the dissecting forceps with which it is held.

View from the back showing heart in position before removal from chest. Note the size of the lungs.

spurted out for some distance, showing that there was an excessive accumulation in the vein. On opening the chest cavity, the presence of what appeared to be a huge echinococcus cyst was observed. There was no exudate in the chest cavity. On dissecting further it was seen that the lungs had collapsed and were very much atrophied, and the "cyst" was a hydropericardium. The sac was carefully taken out and measured. It was six inches in length and five inches broad. The weight of the sac and contents was one pound nine ounces. The contents consisted of a turbid serum-like liquid in which floated numerous flocculi. The amount collected measured 18 ounces. The heart itself was much atrophied, its greatest length being 2½ inches. The walls were very thin. The valves were normal.

The cause of the dropsy would be apparently difficult to place. If the nephritis had been the original starting point, then one would have expected to find the heart in a condition ot hypertrophy, but in this case the opposite condition prevailed. In dogs an indurative nephritis is sometimes found simultaneously with valvular trouble, though not as a consequence of the heart trouble itself, but owing to the same cause that has given rise to the endocarditis. (Hutyra and Marek, Vol. 1, page 1,078.) O. V. Brumley states in his *Diseases of the Small Domestic Animals*, page 393, that "chronic nephritis may follow some of the infectious diseases, such as distemper. The excess of waste products, together with the various toxins formed, are eliminated in such quantity that they irritate the renal tissues." It is possible that this dog had a form of distemper when he was first noticed to be ill.

It is known that hydropericardium most often accompanies general hydropsy and I am inclined to think that the condition of the kidneys was the starting point of the conditions which were found. The accompanying photographs show the heart and its distended pericardium in position and the sac when it was removed from the chest.

Internal Hernia through the Foramen of Winslow.

By G. W. Begg, M.R.C.V.S., Invergordon.

This seems to be a very uncommon condition, as no text-books describe it, and few mention it at all. Hutyra and Marek, however, give the following statistics from the records of the Prussian army:—"Statistics of the Prussian army for the years 1892-1908 show that of 71,532 cases of colic among horses, 1,069 cases (1·48 per cent.) were due to internal strangulation, and among these *post-mortem* examination showed 304 (0·42 per cent.) to be diaphragmatic hernia; 234 (0·33 per cent.) displacements through the foramen of Winslow."

On December 8th, about 11 p.m., I was called to a case of colic.

Subject.—Two-year-old Clydesdale filly, which was at the grass during the day and housed at night. On the above date she was brought in about 4 o'clock and put in a loose-box. She ate her feed of oats and straw, and nothing abnormal was noticed until about 8 o'clock, when the owner found her suffering from colic.

Symptoms.—Temperature normal, pulse 60, breathing normal, no perspiration. The only manifestation of pain was occasional pawing and general uneasiness.

(*Continued on first column, page* 951.)

Equine Nasal Catarrh and its Treatment by Vaccines.

The following tabulated statement of cases of equine nasal catarrh treated by vaccines has been forwarded to us by the Hon. Secretary of the Southern Counties Division subsequent to the appearance in the *Record* of the paper on the subject by Capt. C. J. R. Lawrence, from which it was inadvertently omitted :—

Case No.	Particulars of Case.	Period affected with catarrh prior to commencement of vaccine treatment.	Vaccine employed.	Other treatment administered simultaneously.	Result.	Period taken for discharge to cease after inoculation of the first dose.	Remarks.
		Days.	All polyvalent.			Days.	
1	Strangles, 8-3-23 to 28-3-23	12	Autogenous	Nil.	Cured	15	—
2	Catarrh	Not known	,,	Nostrils washed out twice daily with saline solution.	,,	14	—
3	Catarrh and laryngitis ...	14	,,	Steam inhalations and electuary.	,,	12	—
4	Intermittent discharge from off nostril at intervals of about three days	71	,,	Nil	No change	After receiving six doses of vaccine this animal was destroyed as incurable. On post-mortem examination the superior maxillary sinus was found full of thick, creamy, odourless pus ; the lining membrane of the sinus being thickened, desquamated and deeply stained in patches, the colour varying from bright red to dark brown.	
5	Catarrh	40	,,	Nil	Cured	14	—
6	Catarrh	56	,,	Nil	,,	14	—
7	Strangles, 16-4-23 to 16-5-23 Catarrh, 4-7-23 to 25-7-23	33	,,	Nil	,,	10	—
8	Catarrh	Not known	Heterogenous	Steam inhalations	Improved	34	—
9	Catarrh	,,	,,	,,	Cured	6	—
10	Catarrh	,,	,,	,,	,,	10	—
11	Catarrh following strangles	,,	,,	,,	,,	24	—
12	Catarrh following strangles	18	,,	Nil	,,	12	—
13	Catarrh following strangles	Not known	,,	Steam inhalations	,,	10	—
14	Catarrh, 8-7-23 to 18-7-23 .. Readmitted with laryngitis and catarrh 31-8-23.	7	,,	Steam inhalations and electuary	,,	10	—
15	Catarrh	7	,,	Nil	,,	8	—
16	Catarrh	Not known	,,	Nil	,,	6	—
17	Catarrh	9	,,	Nil	,,	7	—

Percentage of cases cured ... 88·24.
,, ,, improved ... 5·88.
,, ,, unchanged ... 5·88.
Average time taken by cured cases to cease discharging, 11·46 days.

Abstracts and Reviews.

Chronic Glanders in Man.*

Owing to the rarity of glanders in man, errors in diagnosis are apt to be made. Dr. H. Schwartz, of Troppau in Silesia, who records† a case in a soldier, aged 27, which proved fatal after 21 months' illness, illustrates the rarity of human glanders by the fact that during the period 1876–86 there were only twenty known cases in the whole of Prussia. During the late war, when there was for a time a considerable increase in glanders among horses, no epidemic occurred among human beings. According to Luhr's estimate, during the war there were only about fifty human cases, and these were mainly due to laboratory infections from handling cultures of glanders bacilli. Manipulation of the blood of infected animals apparently never gave rise to any case. Veterinary surgeons are occasionally infected in the performance of autopsies, but the attendants of animals suffering from the disease run the greatest risk. The not-infrequent occurrence of joint swellings in the course of chronic glanders may lead to the erroneous of diagnosis polyarthritis. Acute glanders is liable to be mistaken for typhoid fever, septicæmia, or erysipelas, while chronic glanders, as in Schwartz's case, may be diagnosed as tuberculosis or syphilis. The mortality from chronic glanders is 50 per cent. (Jochmann). As regards treatment, Luhr and his collaborators, who carried out systematic investigations on a large number of horses during the war, employed seven different varieties of salvarsan, dyes such as methylene-blue, copper compounds, preparations of iodine and mercury, quinine, and other drugs. Most of these had no effect, though a combination of mercury and potassium iodide was encouraging. Protein-therapy, the use of serum, and treatment with glanders bacilli were also fruitless, and a specific cure for the disease has not yet been found.

(*Continued from page* 949.)

Auscultation of the abdomen revealed very little peristalsis, and on rectal examination the pelvic flexure was impacted and doughy.

Diagnosis.—Impaction of colon.

Treatment.—Eight drachms aloes, half-grain arecoline and half-grain strychnine hypodermically. A sedative draught was left lest she should become pained during the night.

The owner rang up about 11 a.m. next day to say that the filly was dead. She had been very quiet until about 7 a.m., when she became badly pained, commenced to sweat profusely, and died three hours later.

Post-mortem revealed that practically the whole of the ileum had passed through the foramen of Winslow and become strangulated. The large colon was impacted.

The peculiarity in this case is that the filly should have taken so long to develop grave symptoms, although suffering from a strangulation.

* Extract from *The Lancet*, December 8th, 1923, p. 1255.
† Medizinische Klinik, October 7th.

THE AGE OF THE HORSE, by J. L. Frateur, illustrated by E. Tschaggeny, translated by G. Mayall, M.R.C.V.S. Bailliere, Tindall and Cox. Price 5/-.

Is well written and easily understandable by the veriest novice, whilst the coloured plates—27 in number—illustrating the different ages, should prove valuable as a guide alike to the practitioner, student, and stockowner. Added to that, its size is such that it is adapted for the pocket.

Research in Animal Breeding.

THE SCIENCE OF GENETICS.

Dr. Crew, Director of the Animal Breeding Research Department, Edinburgh, gave an address on the application of genetics to animal breeding at the opening meeting of the Bangor Agricultural Discussion Society. He showed how the worker in genetics is securing exact information on the various facts and problems of heredity, and by working out the most straightforward cases is gradually accumulating knowledge which ultimately, when applied by the skilled breeder, will place stock-breeding on a different plane from what it occupies at present. As a science genetics is about twenty years old, but already a great deal of knowledge of the principles of heredity and of variation has been obtained from the study of such animals as flies, moths, mice, rabbits, etc. This in no way lessens its ultimate value to the stock-breeder, because in all cases the same general principles have been found to hold true when applied to the known facts of heredity and variation in horses, cattle, sheep, and pigs.

The fundamental idea of genetics is that the future characters of an individual are determined by its hereditary composition, which is fixed at the time the egg-cell of the mother is fertilised by the sperm-cell of the sire. The geneticist holds that the phenomena of heredity have a definite and knowable basis, that in this matter there are no real mysteries, but only present lack of knowledge. The science of genetics has made great strides during the past ten years, and its influence has been extended into the realm of practical stock-breeding, but it is unreasonable to expect this to result in any immediate advance in the practical art of stock-breeding, as yet far in advance of the applied science. The principles of heredity were in operation long before Mendel discovered them, and the successful stockbreeder, whether he recognised it or not, was the man who adopted practice which was in accordance with laws which the scientist is only now beginning to put into definite form.

The great service which genetics offers to-day to the breeder is the means it provides for interpreting his methods and results, so as to enable him to concentrate on essentials, and thus proceed confidently and more directly to his goal. In its application the science is of most value to the breeder of small, quickly reproducing and rapidly maturing stock, such as poultry.

Divisional Reports.

West of Scotland and Scottish Metropolitan Divisions.*

A joint meeting of the Scottish Metropolitan and West of Scotland Divisions of the National Veterinary Medical Association was held at the Royal (Dick) Veterinary College on October 20th, 1923.

W. Wallace Peggie, Esq., F.R.C.V.S., of Biggar, occupied the chair.

The following members of the Divisions were also present:—Dr. Whitehouse, Messrs. A. Robb, T. Dalling, J. Macfarlane, W. Roy, R. Mitchell, D. Campbell, J. Wilson, P. Meikle, J. F. Taylor, R. G. Anderson, J. Gillray McGregor, J. Mason, G. W. Weir, A. Kerr, A. Gofton, T. M. Inglis, J. Brown, J. Taylor, J. Russell Greig, W. Anderson, T. Aitken, P. Wilson, W. M. Mitchell, E. J. H. Sewell, D. L. McWhirter, W. C. Miller, J. Player, J. H. Jones.

Visitors.—Convenor W. J. Harvey, Councillor A. Young, Messrs. W. Jackson Young, J. Greear, and W. Harris.

During the morning, Mr. A. Robb, Junior, Glasgow, gave an able and practical demonstration of the roaring operation, which was greatly appreciated by all members present, and Professor W. M. Mitchell, Edinburgh, performed operations on some of the smaller animals, and gave a classical demonstration in operative technique.

Luncheon was served in the College. This proved to be a pleasing interlude between the sessions.

Mr. Gillray McGregor, M.R.C.V.S., Assistant County Veterinary Inspector, Lanarkshire, then submitted a highly interesting and informative paper on "Some Thoughts on the Tuberculosis Problem."

An animated discussion was opened by Mr. J. Taylor, Edinburgh, and was taken part in by the following members and visitors:—

Messrs. J. Brown, Invergordon, T. M. Inglis, Forfar, P. Meikle, Strathavon, A. Gofton, Edinburgh, W. Roy, Glasgow, Dr. Whitehouse, Glasgow Veterinary College, R. G. Anderson, Cupar, A. Spruell, Junior, Dundee and Councillor A. Young, Edinburgh.

[The report of Mr. Gillray McGregor's paper and the discussion upon it will appear in a future issue.—Ed.]

Mr. Gofton moved a vote of thanks to Mr. Mc Gregor for his paper. The members had shown their great appreciation of Mr. McGregor's efforts by the excellent discussion which had followed.

Mr. McGregor: On behalf of the West of Scotland Division I wish to tender you a hearty vote of thanks for the most enjoyable day you have enabled us to spend. (Applause.)

The Chairman: Dr. Whitehouse and members of the West Division, I can assure you it has been a very great pleasure indeed for the members of the East to have you with us to-day, and there is a proposal—in fact it is an accomplished fact—that the next meeting, which is to take place in February, should be held in Glasgow, and if it is as great a success as this I am sure we will all be delighted. I think this is one of the most pleasant meetings at which I have had the pleasure of occupying the chair, and I think if we had a number of these larger meetings it would do a great amount of good.

A vote of thanks to the Chairman concluded the proceedings.

G. W. Weir, *Hon. Secretary West of Scotland Division.*

J. Howard Jones, *Hon. Secretary Scottish Metropolitan Division.*

(*Continued from previous page.*)

Problems for the Future.

Genetics has shown that characters or groups of characters are inherited in such a way that they may be treated as independent units. It has shown clearly the value of selection, not as a means of creating new characters as the breeder so often believes, but as enabling him to sort out what he requires from the mixture of heritable characters already present in the stock. The geneticist has gained considerable knowledge of the mechanism of sex determination, and of sex-differentiation, and has interpreted the phenomena of sex-linked inheritance, intersexuality, and sex-reversal. He has demonstrated beyond doubt that certain forms of disease are truly inborn, has disclosed the method of their transmission, and has shown the way through breeding by which they may be eliminated. He has given an exact meaning to the phenomena of inbreeding, outbreeding, and prepotency, and has shown that fecundity, fertility, longevity, and certain forms of sterility have a definite genetical basis. He has critically examined the traditional beliefs, and is able to give an authoritative opinion as to their validity.

There is much of value here to the stockbreeder, and it may be confidently asserted that the future lies with the experienced and skilful breeder, who, by combining a thorough working knowledge of the science of genetics with his practical skill, will be able to effect improvement with certainty and speed.

If a breeder should ask, "What is there that the geneticist has done that can help me straightway in my efforts to build up a herd of cattle with an exceptionally high milk-yield?" the answer that must be given is "Nothing yet," but that the physiology of milk secretion and the inheritance of relatively high or low milk-yield is being studied intensively, and information of the greatest value may be expected within the next ten years. The fact that sufficient knowledge is not available to-day is to be explained quite simply. The problem is a most complicated one, and its solution demands considerable time and expense. Not sufficient time has been devoted to the problem, and the geneticist has not been in a position to work with a sufficiently large number of individuals.—*The Scotsman.*

* Received on December 16th, 1923.

Liverpool School of Veterinary Science.

Degree of B.V.Sc.

Final Examination, *Part I.*—Knight, Edith G.; Woolley, N. *Part II.*—Hare, T.

Third Examination, *Part II.*—Shuttleworth, A. C.

Second Examination, *Part II.*—Mills, D. W.; Morcos, Z.

Notes and News.

The Editor will be glad to receive items of professional interest in these columns

NOTICE TO DIVISIONAL SECRETARIES.

The Editorial Committee, wishing to be of assistance to the divisions, and with a view to achieving uniformity in the reports of meetings, and acceleration in their publication in the *Record*, are prepared to send their representative to report their proceedings.

Will Secretaries of divisions, wishing to avail themselves of this offer, forward particulars as to dates, times, and places of meeting to the Editor, 10 Gray's Inn Square, W.C.1, at least a month prior to such meetings, when the scale of charges will be forwarded to them?

Diary of Events.

Jan. 8th and 9th—N.V.M.A. Council and Committees.
Jan. 10th—Mid-West and South Wales Meeting at Hereford.
Jan. 10th and 11th—R.C.V.S. Council and Committees.
Jan. 16th—South Eastern Division, Annual Meeting and Dinner at Tunbridge Wells.
Jan. 25th—Royal Counties Division Meeting at Reading, followed by Annual Dinner.
Feb. 8th—Midland Division, Annual General Meeting at Birmingham.

A Happy New Year to All!

* * * *

We hope to have the Committee Room at Gray's Inn Square ready and furnished in time for the Council Meeting on the 8th of January. Major Simpson has presented us with a beautiful carpet, which he chose with the help of the small committee of enthusiasts who have made it their business to see that the room is made worthy of the Association. Mr. Jack Willett has been in with paint and brush, painting the safe, etc., and generally fixing up fittings (also supplying them). Last week Mr. W. D. Rees, who was in town doing some Christmas shopping, left behind him a crisp banknote to help the fund which has so kindly been subscribed for the purpose of giving us a really nice headquarters.

* * * *

Mr. Jones, of Ruthin, who is well known to all our members in North Wales, has been appointed Veterinary Surgeon to the Government of Siam and Veterinary Surgeon to the King of Siam. We understand he has already left home to take up his duties, and we offer him our congratulations and wish him success.

* * * *

Mr. J. H. Stewart, M.C., has taken a colonial appointment in East Africa. Mr. M. Crawford has been appointed Assistant Veterinary Surgeon to the Government of Ceylon. Mr. Bristow, B.Sc., has been appointed junior assistant to the Animal Diseases Research Association, Glasgow. The appointment of a senior assistant will probably be made in March or April.

* * * *

Scottish members will be particularly pleased to hear the news we published last week that Mr. George Howie, jun., has been appointed to the Armstrong

(*Continued at foot of next column.*)

Correspondence.

Letters to the Editor should reach the Office not later than by the 1rst post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Fees under the C.D.A. Acts.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—The statement of Mr. Wm. Scott in your issue of the 8th inst.: that the efforts of the Veterinary Inspectors' Association to obtain an increase of fees for work under the Contagious Diseases (Animals) Acts, "met with complete failure," is not correct.

On the contrary, in the case of some counties, their efforts met with complete success, and I can furnish Mr. Scott with a number of instances in which, as a direct result of the efforts of the Association, increases on the pre-war standard of from 20 per cent. to 50 per cent. have been granted.

In several counties the fees were doubled and in one, at least, the new scale was higher than the official fees adopted by the Association, inasmuch as an additional fee for time is payable.

I have not time at the moment to turn up the correspondence files dealing with this question of Fees, but here are a few points which may cause Mr. Scott to reflect as to whether his assertion is not a little too sweeping.

At the outset of its career the Association obtained, not without considerable trouble, the scale of fees paid, at that time, by forty-two Local Authorities in England, Scotland and Wales. Each item was tabulated under the different counties or boroughs, and the information posted to each member of the Association. Several meetings of the Association were subsequently held for the purpose of adopting a suggested scale of fees for the guidance of members seeking an increase. Such a scale was finally adopted on November 24th, 1920, was circulated to every member of the Association, was twice published in the *Record*, and was presented to the Secretary of the

(*Continued from previous column.*)

College, Newcastle, not only on accouut of his own popularity in the Midlands, but because of the gratification and pride that it will give to his father, Mr. G. Howie, of Aberdeen. Mr. Howie, jun. has been working with Mr. DeVine for the Corporation of Birmingham, and is a welcome member of the Midland Division. We offer him our hearty congratulations and hope his appointment will lead to something very good in the future.

* * * *

We also have to congratulate Mr. Montgomerie, B.Sc., on his appointment to the University of Bangor, a post which was much desired by a large number of applicants. Mr. Montgomerie qualified at the last July examinations, and his early appointment to such a post of responsibility marks him at once as a young man above the average, and one of whom we expect to hear more.

County Councils' Association of Great Britain " with a view to its consideration for adoption throughout the United Kingdom." Previous to the circulation of this full list of fees prepared for the County Councils' Association, a preliminary scale had been adopted and sent to members in May 1919, accompanied by the suggestion that members should apply to their Local Authorities for an increase up to the minimum scale enclosed. How far this advice was acted upon and with what result, we were not in a position to judge. Accordingly a letter, from which the following is an extract, was published in the *Record* on or about July 12th, 1919.

" The Council expressed a decided opinion that strenuous efforts should be made to secure adoption of this minimum scale by every County Authority in the Kingdom. The machinery by which this much-needed reform can best be obtained is not easy to set in motion.

" Obviously I, as Secretary of the Association, cannot approach each and every County Council in the Kingdom, if only for the reason that I do not know who or where they are. There is another and better method however, which is that, *in each County*, one or more Veterinary Inspectors should call together the whole of the Inspectors in that County, adopt this scale of fees, and forward the same to their respective County Authorities, etc.

" A report as to acceptance, alteration, or refusal, should then be sent to me for consideration by the Council of the N.A.V.I."

The result of that appeal was that replies were received from only twelve counties, together with expressions of gratitude from a few individual members that they had obtained all they wanted. About this time it came to our knowledge that the County Councils' Association were prepared to consider the adoption of a uniform scale of fees which should be applicable to the whole country and that, pending the result of their decision in the matter, some County Authorities were granting a percentage increase, varying from 20 per cent. upwards. Further meetings of our Association were held and finally, in November, 1920, a full list of suggested fees, mileage, etc., for every item of C.D.A. work was adopted and sent to the County Councils' Association on December 2nd, 1920, accompanied by a letter from which the following are extracts.

" During the past two or three years, the National Association of Veterinary Inspectors has been endeavouring to obtain for Veterinary Inspectors, a higher and more uniform rate of remuneration for work under the Contagious Diseases (Animals) Acts.

" At present, no two counties pay their Inspectors on the same scale, the rates varying between very wide margins. As examples, I beg to enclose a list of a few specimen fees payable in various counties, from which it will be seen that the remuneration varies from 5s. for an anthrax inspection and microscopical examination of blood in Wiltshire, to two guineas for precisely the same work in Leicestershire. Mileage allowances also range between 4½d. per mile in Huntingdon, and 1s. per mile in Durham. So far, our efforts to obtain a more equitable scale of fees have been, in many cases, abortive, or only partially successful, largely because the mtehods employed of approaching each County Authority individually, are complicated and unsatisfactory. From several sources we have learnt that the County Councils Association proposes to take this matter in hand, and it is in consequence of this, that I am venturing to approach you and am enclosing, for your information, a scale of fees which the Council of the N.A.V.I. has adopted as reasonable remuneration for the responsible duties which Veterinary Inspectors are called upon to perform," etc.

On December 7th, 1920, a reply was received from the County Councils' Association as follows :—

84 Eccleston Square, S.W.,
6th December, 1920.

Dear Sir,—

Fees and Allowances of Veterinary Inspectors.

I am in receipt of your letter of the 2nd inst., and enclosures, with reference to the fees and allowances paid by various counties to their Veterinary Inspectors, and asking that the County Councils' Association shall, before coming to any definite conclusion in regard to a uniform scale for the whole country, consult your Association in the matter. In reply, I beg to inform you that your letter shall be submitted to the special committee which has been appointed by the Association to deal with the question. The Association are, of course, fully aware of the great differences obtaining in the scales adopted at the present time, and it is for that precise reason that they have taken the matter in hand.

Yours faithfully,
(signed) S. M. JOHNSON.

No further reply having been received from the County Councils' Association, I wrote, after some months, to remind them of the fact, to which I received an answer that the Committee had not yet completed its work. A few more months elapsed and I then received a letter to the effect that " the Committee had found the subject so complicated that they were unable to make any recommendation."

I am unable to give an exact quotation of their final answer, as I gave the letter to Major Hobday some months ago, for editorial use, and no doubt it is filed at the Office of the *Veterinary Journal*. A prolonged meeting of the Council of the N.A.V.I. was held at Birmingham to consider what action should be taken in view of the dead end to which the reply of the County Councils' Association had brought us. This meeting was attended by representatives of one particular county, every Veterinary Inspector of which had undertaken to send in his resignation if the adopted scale of fees was not agreed to. We spent half the night in persuading them to " carry on " in the hope that some way out of the *impasse* would be found. That hope has not been realised and we have handed over the business to the National Veterinary Medical Association for them to find the means which we have failed to discover, by which *each Authority can be compelled to pay its Inspectors on one uniform scale*. So much for some of our efforts. How were they backed up, by Mr. Wm. Scott, for instance ? Here is a letter from that gentleman dated May 5th, 1921.

" Dear Mr. Spencer,—I have been asked to call a meeting of the Veterinary Inspectors for the County of Somerset to consider a revision of the fee scale. I wonder if you would oblige me with an official list of fees as suggested by the Association of Veterinary Inspectors. Sorry to bother you.—Yours faithfully, (signed) Wm. SCOTT."

The information asked for by Mr. Scott was sent to him on the following day, very nearly *two years after he had been invited to apply for it and act on it*, and had failed to do so.

I have already encroached too far on your space but just a few words in conclusion as to our efforts having " met with complete failure."

On June 10th, 1919, a letter, from which the following is an extract, was sent to the then Board of Agriculture and Fisheries.

" ——— I received instructions to convey to the Secretary of the Board of Agriculture and Fisheries, a resolution, unanimously adopted, asking the Board if a

suggested revision of the scale of fees payable to Local Veterinary Inspectors for work under the Swine Fever Orders, would receive sympathetic consideration. In the event of a decision on the part of the Board that an increase in the scale of fees is justifiable, I was further instructed to suggest the following amended scale," etc.

The following reply was received from the Board on September 9th, 1919.

"Board of Agriculture and Fisheries,"
8th Sept., 1919.

"Sir,—I am directed by the President of the Board of Agriculture and Fisheries to refer to your letter of June 10th last, written on behalf of the National Association of Veterinary Inspectors, asking for a revision of the scale of fees. . . .

". . . I have now been informed that their Lordships have authorised the Board to pay, on and after the 1st inst., an increase of 20 per cent. on all fees payable for work done after that date. . . .

"On hearing that the Association are prepared to accept the increase on the above terms, the Board will arrange accordingly."

Your obedient servant,
(signed) H. E. DALE.

Here are two other cases on which the unsympathetic attitude of the County Councils' Association has a direct bearing. The first is from the County Council of Northampton who, in reply to an application for increased fees, sent to them in May, 1920, replied as follows :—

"The Committee (of the County Council) understand that the matter is under consideration by the County Councils' Association, who are moving to secure the adoption of a uniform scale of fees to Veterinary Inspectors for work under the Acts, for the country. In view of this fact . . . they were indisposed to grant a new scale at the present time, but, as a temporary measure, pending the result of the action of the C.C.'s Association, they resolved to approve an increase of 20 per cent. in the scale of fees now payable to the Inspectors employed by them, such increase to date from March 1st last (1920)."

In another case Gloucestershire granted an increase in some of the fees, the amount of which I do not know, but here also the Chairman gave an assurance that "when the County Councils' Association had arrived at some definite decision, they would be perfectly willing to re-open the whole question, and more than probably, carry out the recommendations of the County Council's Association."

I should be the last to contend that the work of the N.A.V.I. is not open to criticism. As to this, I may have something to say on some other occasion. It must not be forgotten, however, that the *chief object* for which it was formed, ceased to exist when the Tuberculosis Order was withdrawn.—Your obedient servant, TREVOR F. SPENCER, M.R.C.V.S., London Road, Kettering.

15*th December*, 1923.

Bracken Poisoning.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I must thank Major Frank Chambers for replying to my letter in connection with the above subject, but I am disappointed that he did not give me the information for which I asked.

In South Africa, if an animal dies from a specific disease, such as East Coast fever or anthrax, or from a non-specific disease, and blood smears are taken from the carcase after it has undergone putrefaction, it is no uncommon thing for smears to show crowds of organisms of the pasteurella type, but they are certainly not pathogenic.

It is generally admitted that Bipolar organisms are frequently secondary invaders, and there is no reason why they should not appear in this rôle in cases of so-called bracken poisoning.

In all acute cases of true hæmorrhagic septicæmia in cattle, numerous organisms can be found in the blood and internal organs. Major Chambers clearly knows this, otherwise he would not ask for blood smears to be sent to him. If blood and gland smears, taken from carcases of animals which have succumbed to so-called bracken poisoning are examined microscopically, they prove negative. There is thus a big difference.

It is pleasing and interesting to read of Major Chambers' discovery, but in spite of it I still remain unconvinced that these are cases of hæmorrhagic septicæmia, and do not think that any evidence has been advanced to prove that the organisms he saw were even pathogenic ones.—Yours faithfully, R. P. JONES, Holland House, Ruthin.

"Jersey."

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Mr. Gray's letter is quite the most curious jumble of shallow thought with which I have met for a long time. The R.C.V.S. has no resemblance to a Trades Union; it exists chiefly to protect the public by ensuring at least a minimum of knowledge and of good conduct in its members. The Army grievance was tackled by it in a manner befitting a professional body untainted by Trades Unionism, and the grievance was righted by the laws of supply and demand, being a just one.

Trades Unionism is neither "natural" nor "instructive"; it has nothing to do with "protection of the species," nor with "natural laws"; and is not "as old as Creation itself." All these statements of Mr. Gray's are pure fallacies.

The natural law is that if you want to improve your relative standard of living, you must make yourself worth more by working better, quicker or longer.

The unnatural law is that men of a trade must combine together to force up wages by creating an artificial monopoly against the interests of their fellow-men, and that they must treat any of their fellow-tradesmen who stay outside the Union with abuse (see Mr. Gray's first two letters) and by intimidation.

These are the reasons why the "so-called highly-trained brain worker" refuses to follow the unintelligent and selfish example of the "manual labourer."—Yours truly, A. S. LEESE.

Veterinary Infirmary,
20 St. George's Square, Stamford,
17*th December*, 1923.

[This correspondence is now closed.—ED.]

War Memorial Library.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—Will you allow me the use of your columns to ask if any member has the following "spare parts" which are wanted to complete our collection.

Bulletin de la Société Centrale de Médicine Vétérinaire: Vol. XLII., 1888; Vol. XLIII., 1889; Vol. XLIV., 1890, Nos. from April to December; Vol. XLVI., 1892, Nos. from January to September.

We have the following in duplicate which we should be glad to exchange for the above:—Vols. LXIV.-LXVII. (1910-1913), and Vol. XCIII. (1917).—Yours faithfully, FRED. BULLOCK, Librarian.

10 Red Lion Square, London, W.C.1.
18*th December*, 1923.

The Editor begs to acknowledge the receipt of the following:—

Communications from Messrs. H. Gray, A. S. Leese and J. D. Pottie.

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